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# LAMPIRAN

**Lampiran 1.** Data Status Gizi Balita di Kabupaten Gowa Tahun 2022

| No. | Jenis Kelamin | Usia (Bulan) | Berat Badan (Kg) | Panjang Badan (Cm) | Status Gizi |
|-----|---------------|--------------|------------------|--------------------|-------------|
| 1   | Laki-laki     | 34           | 13.2             | 93.0               | Gizi Baik   |
| 2   | Perempuan     | 25           | 12.8             | 84.0               | Gizi Lebih  |
| 3   | Laki-laki     | 36           | 13.5             | 90.5               | Gizi Baik   |
| 4   | Laki-laki     | 53           | 15.0             | 100.0              | Gizi Baik   |
| 5   | Perempuan     | 45           | 13.2             | 99.0               | Gizi Baik   |
| 6   | Perempuan     | 51           | 14.4             | 99.0               | Gizi Baik   |
| 7   | Perempuan     | 45           | 13.5             | 96.0               | Gizi Baik   |
| 8   | Perempuan     | 22           | 7.7              | 75.5               | Gizi Kurang |
| 9   | Perempuan     | 22           | 9.4              | 79.7               | Gizi Baik   |
| 10  | Laki-laki     | 5            | 6.0              | 61.0               | Gizi Baik   |
| 11  | Perempuan     | 22           | 10.2             | 80.0               | Gizi Baik   |
| 12  | Laki-laki     | 49           | 15.0             | 100.0              | Gizi Baik   |
| 13  | Perempuan     | 56           | 14.0             | 98.0               | Gizi Baik   |
| 14  | Perempuan     | 53           | 13.9             | 101.0              | Gizi Baik   |
| 15  | Perempuan     | 58           | 18.8             | 102.1              | Gizi Lebih  |
| 16  | Perempuan     | 9            | 5.8              | 64.5               | Gizi Kurang |
| 17  | Laki-laki     | 42           | 10.5             | 90.0               | Gizi Kurang |
| 18  | Perempuan     | 26           | 9.0              | 84.0               | Gizi Kurang |
| 19  | Perempuan     | 26           | 9.5              | 87.0               | Gizi Kurang |
| 20  | Laki-laki     | 50           | 18.0             | 101.0              | Gizi Lebih  |
| 21  | Laki-laki     | 36           | 12.0             | 95.0               | Gizi Kurang |
| 22  | Laki-laki     | 8            | 7.0              | 70.0               | Gizi Kurang |
| 23  | Laki-laki     | 36           | 10.7             | 90.2               | Gizi Kurang |
| 24  | Perempuan     | 50           | 16.4             | 95.3               | Gizi Lebih  |
| 25  | Laki-laki     | 14           | 10.0             | 72.0               | Gizi Lebih  |
| 26  | Perempuan     | 52           | 17.8             | 102.0              | Gizi Lebih  |
| 27  | Perempuan     | 11           | 8.7              | 68.0               | Gizi Lebih  |
| 28  | Laki-laki     | 17           | 10.7             | 75.0               | Gizi Lebih  |
| 29  | Laki-laki     | 42           | 16.6             | 98.0               | Gizi Lebih  |
| 30  | Laki-laki     | 26           | 8.0              | 82.0               | Gizi Kurang |
| 31  | Laki-laki     | 55           | 15.3             | 93.0               | Gizi Lebih  |

|       |           |    |      |       |             |
|-------|-----------|----|------|-------|-------------|
| 32    | Laki-laki | 58 | 18.9 | 105.0 | Gizi Lebih  |
| 33    | Laki-laki | 47 | 11.7 | 95.0  | Gizi Kurang |
| 34    | Laki-laki | 6  | 7.7  | 60.6  | Gizi Lebih  |
| 35    | Laki-laki | 49 | 12.0 | 99.0  | Gizi Kurang |
| 36    | Laki-laki | 12 | 9.8  | 70.3  | Gizi Lebih  |
| 37    | Laki-laki | 60 | 15.5 | 110.0 | Gizi Kurang |
| 38    | Laki-laki | 58 | 13.9 | 113.0 | Gizi Kurang |
| 39    | Perempuan | 12 | 7.0  | 72.0  | Gizi Kurang |
| 40    | Laki-laki | 34 | 13.5 | 86.8  | Gizi Lebih  |
| 41    | Laki-laki | 54 | 11.0 | 94.0  | Gizi Kurang |
| 42    | Laki-laki | 34 | 14.0 | 90.0  | Gizi Lebih  |
| 43    | Laki-laki | 45 | 11.8 | 95.0  | Gizi Kurang |
| 44    | Laki-laki | 49 | 14.7 | 108.0 | Gizi Kurang |
| 45    | Perempuan | 30 | 13.0 | 85.0  | Gizi Lebih  |
| 46    | Laki-laki | 45 | 11.6 | 93.0  | Gizi Kurang |
| 47    | Perempuan | 3  | 2.3  | 47.0  | Gizi Kurang |
| 48    | Perempuan | 22 | 7.7  | 78.0  | Gizi Kurang |
| 49    | Laki-laki | 54 | 12.7 | 99.0  | Gizi Kurang |
| 50    | Laki-laki | 28 | 9.5  | 83.5  | Gizi Kurang |
| ∴     | ∴         | ∴  | ∴    | ∴     | ∴           |
| 17600 | Laki-laki | 14 | 10.2 | 73.2  | Gizi Lebih  |

Sumber: Dinas Kesehatan, 2022

**Lampiran 2.** Titik Knot dan Nilai GCV untuk 1 Titik Knot

Nilai GCV untuk Variabel Usia ( $x_1$ ) disetiap Orde

| No | Orde Linier |           | Orde Kuadratik |           | Orde Kubik |           |
|----|-------------|-----------|----------------|-----------|------------|-----------|
|    | $k_{11}$    | Nilai GCV | $k_{11}$       | Nilai GCV | $k_{11}$   | Nilai GCV |
| 1  | 9           | 0.39794   | 3              | 0.39985   | 2          | 0.40026   |
| 2  | 10          | 0.39797   | 2              | 0.39985   | 3          | 0.40028   |
| 3  | 11          | 0.39798   | 4              | 0.39985   | 4          | 0.40029   |
| 4  | 12          | 0.39799   | 5              | 0.39985   | 5          | 0.40031   |
| 5  | 13          | 0.39801   | 6              | 0.39986   | 6          | 0.40032   |
| 6  | 14          | 0.39803   | 7              | 0.39987   | 7          | 0.40034   |
| 7  | 15          | 0.39807   | 8              | 0.39988   | 8          | 0.40036   |
| 8  | 16          | 0.39813   | 9              | 0.39990   | 9          | 0.40038   |
| 9  | 8           | 0.39819   | 10             | 0.39993   | 10         | 0.40040   |
| 10 | 17          | 0.39825   | 11             | 0.39995   | 11         | 0.40042   |
| 11 | 18          | 0.39847   | 12             | 0.39998   | 12         | 0.40044   |
| 12 | 7           | 0.39848   | 13             | 0.40002   | 13         | 0.40046   |
| 13 | 19          | 0.39866   | 14             | 0.40005   | 14         | 0.40048   |
| 14 | 20          | 0.39888   | 15             | 0.40009   | 15         | 0.40050   |
| 15 | 6           | 0.39896   | 16             | 0.40013   | 16         | 0.40052   |
| 16 | 21          | 0.39909   | 17             | 0.40018   | 17         | 0.40054   |
| 17 | 22          | 0.39932   | 18             | 0.40022   | 18         | 0.40056   |
| 18 | 23          | 0.39951   | 19             | 0.40026   | 19         | 0.40058   |
| 19 | 24          | 0.39969   | 20             | 0.40030   | 20         | 0.40060   |
| 20 | 5           | 0.39972   | 21             | 0.40034   | 21         | 0.40062   |
| 21 | 25          | 0.39983   | 22             | 0.40038   | 22         | 0.40063   |
| 22 | 26          | 0.39994   | 23             | 0.40042   | 23         | 0.40065   |
| 23 | 27          | 0.40003   | 24             | 0.40045   | 24         | 0.40067   |
| ⋮  | ⋮           | ⋮         | ⋮              | ⋮         | ⋮          | ⋮         |
| 58 | 59          | 0.40117   | 59             | 0.40117   | 59         | 0.40117   |

Sumber: Data olah, 2023



Nilai GCV untuk Variabel Berat Badan ( $x_2$ ) disetiap Orde

| No  | Orde Linier |           | Orde Kuadratik |           | Orde Kubik |           |
|-----|-------------|-----------|----------------|-----------|------------|-----------|
|     | $k_{21}$    | Nilai GCV | $k_{21}$       | Nilai GCV | $k_{21}$   | Nilai GCV |
| 1   | 15          | 0.37795   | 12             | 0.38628   | 5          | 0.39060   |
| 2   | 15.1        | 0.37798   | 12.1           | 0.38628   | 4.9        | 0.39060   |
| 3   | 14.95       | 0.37800   | 11.9           | 0.38629   | 5.1        | 0.39060   |
| 4   | 14.9        | 0.37808   | 12.2           | 0.38630   | 4.8        | 0.39060   |
| 5   | 15.2        | 0.37808   | 11.8           | 0.38633   | 4.7        | 0.39060   |
| 6   | 15.3        | 0.37825   | 12.3           | 0.38634   | 5.2        | 0.39060   |
| 7   | 14.8        | 0.37830   | 11.75          | 0.38635   | 4.6        | 0.39061   |
| 8   | 15.4        | 0.37846   | 12.35          | 0.38637   | 5.3        | 0.39061   |
| 9   | 14.7        | 0.37861   | 11.7           | 0.38637   | 4.5        | 0.39061   |
| 10  | 15.5        | 0.37874   | 12.4           | 0.38640   | 5.4        | 0.39061   |
| 11  | 14.6        | 0.37900   | 11.6           | 0.38643   | 4.4        | 0.39061   |
| 12  | 15.6        | 0.37908   | 12.5           | 0.38649   | 5.5        | 0.39062   |
| 13  | 14.51       | 0.37942   | 11.5           | 0.38650   | 4.3        | 0.39062   |
| 14  | 14.5        | 0.37947   | 12.53          | 0.38652   | 5.57       | 0.39062   |
| 15  | 15.7        | 0.37950   | 11.46          | 0.38654   | 5.6        | 0.39062   |
| 16  | 15.8        | 0.37995   | 12.55          | 0.38654   | 4.2        | 0.39062   |
| 17  | 14.4        | 0.37997   | 11.45          | 0.38654   | 4.1        | 0.39063   |
| 18  | 15.9        | 0.38052   | 11.4           | 0.38659   | 5.7        | 0.39063   |
| 19  | 14.3        | 0.38052   | 12.6           | 0.38660   | 4          | 0.39064   |
| 20  | 14.25       | 0.38082   | 12.65          | 0.38667   | 5.8        | 0.39064   |
| 21  | 14.2        | 0.38114   | 11.3           | 0.38668   | 3.9        | 0.39064   |
| 22  | 16          | 0.38118   | 12.7           | 0.38674   | 3.8        | 0.39065   |
| 23  | 14.15       | 0.38146   | 11.2           | 0.38678   | 5.9        | 0.39066   |
| ⋮   | ⋮           | ⋮         | ⋮              | ⋮         | ⋮          | ⋮         |
| 250 | 3.7         | 0.41736   | 30             | 0.41716   | 19.9       | 0.41549   |

Sumber: Data olah, 2023

Nilai GCV untuk Variabel Panjang Badan ( $x_3$ ) disetiap Orde

| No  | Orde Linier |           | Orde Kuadratik |           | Orde Kubik |           |
|-----|-------------|-----------|----------------|-----------|------------|-----------|
|     | $k_{31}$    | Nilai GCV | $k_{31}$       | Nilai GCV | $k_{31}$   | Nilai GCV |
| 1   | 74.5        | 0.40006   | 60.5           | 0.40005   | 47         | 0.40013   |
| 2   | 74.4        | 0.40006   | 60.3           | 0.40005   | 48         | 0.40013   |
| 3   | 74.7        | 0.40007   | 60.2           | 0.40005   | 49         | 0.40013   |
| 4   | 74.6        | 0.40007   | 60.6           | 0.40005   | 49.3       | 0.40014   |
| 5   | 74.8        | 0.40007   | 60.1           | 0.40005   | 49.5       | 0.40014   |
| 6   | 74.3        | 0.40007   | 60.7           | 0.40005   | 49.7       | 0.40014   |
| 7   | 74.2        | 0.40007   | 60             | 0.40005   | 50         | 0.40014   |
| 8   | 74.9        | 0.40007   | 60.8           | 0.40005   | 50.3       | 0.40014   |
| 9   | 75.1        | 0.40007   | 59.9           | 0.40005   | 50.5       | 0.40014   |
| 10  | 74.1        | 0.40007   | 60.9           | 0.40005   | 50.8       | 0.40014   |
| 11  | 75.2        | 0.40007   | 59.8           | 0.40005   | 51         | 0.40014   |
| 12  | 75          | 0.40007   | 61             | 0.40005   | 51.1       | 0.40014   |
| 13  | 74          | 0.40007   | 59.7           | 0.40005   | 51.2       | 0.40014   |
| 14  | 75.3        | 0.40007   | 61.1           | 0.40005   | 51.3       | 0.40014   |
| 15  | 75.4        | 0.40007   | 59.6           | 0.40005   | 51.4       | 0.40014   |
| 16  | 73.9        | 0.40007   | 61.2           | 0.40005   | 51.5       | 0.40014   |
| 17  | 75.5        | 0.40007   | 59.5           | 0.40005   | 51.7       | 0.40014   |
| 18  | 73.8        | 0.40007   | 61.3           | 0.40005   | 52         | 0.40014   |
| 19  | 75.6        | 0.40007   | 59.4           | 0.40005   | 52.1       | 0.40014   |
| 20  | 73.7        | 0.40007   | 61.4           | 0.40005   | 52.2       | 0.40015   |
| 21  | 75.7        | 0.40007   | 59.3           | 0.40005   | 52.3       | 0.40015   |
| 22  | 73.6        | 0.40007   | 61.5           | 0.40005   | 52.4       | 0.40015   |
| 23  | 75.8        | 0.40007   | 59.2           | 0.40005   | 52.5       | 0.40015   |
| ⋮   | ⋮           | ⋮         | ⋮              | ⋮         | ⋮          | ⋮         |
| 585 | 54.7        | 0.40210   | 119            | 0.40207   | 119        | 0.40207   |

Sumber: Data olah, 2023

**Lampiran 3.** Titik Knot dan Nilai GCV untuk 2 Titik Knot

Nilai GCV untuk Variabel Usia ( $x_1$ ) disetiap Orde

| No   | Orde Linier |          |           | Orde Kuadratik |          |           | Orde Kubik |          |           |
|------|-------------|----------|-----------|----------------|----------|-----------|------------|----------|-----------|
|      | $k_{11}$    | $k_{12}$ | Nilai GCV | $k_{11}$       | $k_{12}$ | Nilai GCV | $k_{11}$   | $k_{12}$ | Nilai GCV |
| 1    | 16          | 24       | 0.39769   | 6              | 18       | 0.39785   | 3          | 4        | 0.39874   |
| 2    | 16          | 25       | 0.39770   | 6              | 17       | 0.39785   | 3          | 5        | 0.39874   |
| 3    | 17          | 26       | 0.39771   | 5              | 18       | 0.39785   | 4          | 5        | 0.39874   |
| 4    | 16          | 23       | 0.39771   | 7              | 18       | 0.39785   | 2          | 5        | 0.39874   |
| 5    | 17          | 21       | 0.39773   | 7              | 17       | 0.39785   | 2          | 4        | 0.39874   |
| 6    | 17          | 18       | 0.39773   | 5              | 17       | 0.39786   | 5          | 1        | 0.39875   |
| 7    | 16          | 26       | 0.39773   | 6              | 19       | 0.39786   | 4          | 1        | 0.39875   |
| 8    | 2           | 17       | 0.39773   | 5              | 19       | 0.39787   | 2          | 3        | 0.39875   |
| 9    | 4           | 8        | 0.39774   | 4              | 18       | 0.39787   | 2          | 6        | 0.39875   |
| 10   | 16          | 22       | 0.39774   | 8              | 17       | 0.39787   | 3          | 6        | 0.39875   |
| 11   | 5           | 9        | 0.39775   | 8              | 18       | 0.39787   | 6          | 1        | 0.39875   |
| 12   | 3           | 12       | 0.39776   | 7              | 19       | 0.39787   | 3          | 1        | 0.39875   |
| 13   | 18          | 24       | 0.39776   | 7              | 16       | 0.39787   | 4          | 6        | 0.39875   |
| 14   | 18          | 23       | 0.39776   | 4              | 19       | 0.39788   | 2          | 1        | 0.39875   |
| 15   | 16          | 27       | 0.39777   | 6              | 16       | 0.39788   | 7          | 1        | 0.39875   |
| 16   | 17          | 27       | 0.39777   | 4              | 17       | 0.39788   | 2          | 7        | 0.39875   |
| 17   | 16          | 22       | 0.39774   | 3              | 18       | 0.39788   | 5          | 6        | 0.39875   |
| 18   | 17          | 20       | 0.39777   | 8              | 16       | 0.39788   | 3          | 7        | 0.39876   |
| 19   | 19          | 22       | 0.39777   | 9              | 17       | 0.39789   | 4          | 7        | 0.39876   |
| 20   | 19          | 23       | 0.39777   | 3              | 19       | 0.39789   | 8          | 1        | 0.39876   |
| 21   | 18          | 22       | 0.39778   | 5              | 16       | 0.39789   | 2          | 8        | 0.39876   |
| 22   | 19          | 24       | 0.39779   | 8              | 19       | 0.39789   | 5          | 7        | 0.39877   |
| 23   | 18          | 25       | 0.39779   | 9              | 18       | 0.39789   | 3          | 8        | 0.39877   |
| ⋮    | ⋮           | ⋮        | ⋮         | ⋮              | ⋮        | ⋮         | ⋮          | ⋮        | ⋮         |
| 3364 | 15          | 25       | 0.39779   | 59             | 58       | 0.40119   | 59         | 58       | 0.40119   |

Sumber: Data olah, 2023

Nilai GCV untuk Variabel Berat Badan ( $x_2$ ) disetiap Orde

| No  | Orde Linier |          |           | Orde Kuadratik |          |           | Orde Kubik |          |           |
|-----|-------------|----------|-----------|----------------|----------|-----------|------------|----------|-----------|
|     | $k_{21}$    | $k_{22}$ | Nilai GCV | $k_{21}$       | $k_{22}$ | Nilai GCV | $k_{21}$   | $k_{22}$ | Nilai GCV |
| 1   | 15          | 21       | 0.37888   | 14             | 18       | 0.37807   | 13         | 14       | 0.37917   |
| 2   | 15          | 22       | 0.37890   | 14             | 17       | 0.37824   | 13         | 15       | 0.37922   |
| 3   | 15          | 23       | 0.37902   | 15             | 16       | 0.37875   | 12         | 15       | 0.37940   |
| 4   | 15          | 20       | 0.37907   | 13             | 19       | 0.37881   | 12         | 16       | 0.37959   |
| 5   | 15          | 24       | 0.37924   | 13             | 18       | 0.37882   | 12         | 14       | 0.38009   |
| 6   | 15          | 25       | 0.37937   | 14             | 19       | 0.37883   | 11         | 16       | 0.38013   |
| 7   | 15          | 26       | 0.37947   | 15             | 17       | 0.37888   | 14         | 15       | 0.38023   |
| 8   | 15          | 19       | 0.37951   | 14             | 16       | 0.37922   | 13         | 16       | 0.38025   |
| 9   | 15          | 27       | 0.37962   | 13             | 20       | 0.37938   | 11         | 17       | 0.38045   |
| 10  | 15          | 28       | 0.37988   | 13             | 17       | 0.37965   | 11         | 15       | 0.38054   |
| 11  | 15          | 29       | 0.38005   | 15             | 18       | 0.37979   | 12         | 17       | 0.38055   |
| 12  | 4           | 15       | 0.38008   | 14             | 20       | 0.38013   | 10         | 17       | 0.38125   |
| 13  | 15          | 18       | 0.38017   | 13             | 21       | 0.38021   | 11         | 18       | 0.38136   |
| 14  | 5           | 15       | 0.38023   | 14             | 15       | 0.38090   | 10         | 16       | 0.38136   |
| 15  | 13          | 15       | 0.38032   | 12             | 19       | 0.38102   | 13         | 12       | 0.38144   |
| 16  | 14          | 15       | 0.38035   | 12             | 20       | 0.38109   | 12         | 13       | 0.38144   |
| 17  | 3           | 15       | 0.38046   | 13             | 16       | 0.38110   | 11         | 14       | 0.38167   |
| 18  | 8           | 15       | 0.38046   | 13             | 22       | 0.38114   | 10         | 18       | 0.38169   |
| 19  | 9           | 15       | 0.38049   | 16             | 17       | 0.38145   | 13         | 17       | 0.38201   |
| 20  | 15          | 17       | 0.38051   | 12             | 21       | 0.38145   | 12         | 18       | 0.38206   |
| 21  | 6           | 15       | 0.38052   | 12             | 18       | 0.38146   | 10         | 15       | 0.38210   |
| 22  | 7           | 15       | 0.38053   | 15             | 19       | 0.38156   | 14         | 16       | 0.38227   |
| 23  | 12          | 15       | 0.38053   | 14             | 21       | 0.38157   | 9          | 17       | 0.38244   |
| ⋮   | ⋮           | ⋮        | ⋮         | ⋮              | ⋮        | ⋮         | ⋮          | ⋮        | ⋮         |
| 785 | 3           | 2        | 0.41723   | 29             | 28       | 0.41665   | 29         | 28       | 0.41665   |

Sumber: Data olah, 2023

Nilai GCV untuk Variabel Panjang Badan ( $x_3$ ) disetiap Orde

| No   | Orde Linier |          |           | Orde Kuadratik |          |           | Orde Kubik |          |           |
|------|-------------|----------|-----------|----------------|----------|-----------|------------|----------|-----------|
|      | $k_{31}$    | $k_{32}$ | Nilai GCV | $k_{31}$       | $k_{32}$ | Nilai GCV | $k_{31}$   | $k_{32}$ | Nilai GCV |
| 1    | 52          | 68       | 0.39881   | 51             | 52       | 0.39920   | 61         | 62       | 0.40009   |
| 2    | 52          | 69       | 0.39882   | 51             | 53       | 0.39924   | 60         | 62       | 0.40009   |
| 3    | 52          | 67       | 0.39888   | 50             | 52       | 0.39925   | 60         | 61       | 0.40009   |
| 4    | 52          | 70       | 0.39890   | 50             | 53       | 0.39925   | 60         | 63       | 0.40009   |
| 5    | 51          | 68       | 0.39891   | 52             | 53       | 0.39928   | 61         | 63       | 0.40009   |
| 6    | 51          | 69       | 0.39891   | 49             | 53       | 0.39929   | 59         | 62       | 0.40009   |
| 7    | 53          | 68       | 0.39892   | 50             | 54       | 0.39931   | 59         | 63       | 0.40009   |
| 8    | 53          | 69       | 0.39894   | 51             | 54       | 0.39932   | 59         | 61       | 0.40009   |
| 9    | 52          | 66       | 0.39895   | 49             | 54       | 0.39932   | 62         | 63       | 0.40009   |
| 10   | 52          | 71       | 0.39896   | 49             | 52       | 0.39933   | 60         | 64       | 0.40009   |
| 11   | 51          | 70       | 0.39897   | 48             | 53       | 0.39933   | 59         | 64       | 0.40009   |
| 12   | 53          | 67       | 0.39899   | 50             | 51       | 0.39934   | 58         | 63       | 0.40009   |
| 13   | 51          | 67       | 0.39899   | 48             | 54       | 0.39935   | 58         | 62       | 0.40009   |
| 14   | 51          | 71       | 0.39901   | 47             | 53       | 0.39936   | 58         | 64       | 0.40009   |
| 15   | 52          | 72       | 0.39902   | 47             | 54       | 0.39936   | 61         | 64       | 0.40009   |
| 16   | 53          | 70       | 0.39903   | 53             | 46       | 0.39936   | 59         | 60       | 0.40009   |
| 17   | 53          | 66       | 0.39906   | 54             | 46       | 0.39937   | 58         | 61       | 0.40009   |
| 18   | 51          | 72       | 0.39907   | 52             | 54       | 0.39937   | 59         | 65       | 0.40009   |
| 19   | 52          | 73       | 0.39907   | 48             | 52       | 0.39940   | 57         | 63       | 0.40009   |
| 20   | 52          | 65       | 0.39908   | 50             | 55       | 0.39940   | 57         | 64       | 0.40009   |
| 21   | 51          | 66       | 0.39909   | 49             | 55       | 0.39941   | 58         | 65       | 0.40009   |
| 22   | 53          | 71       | 0.39909   | 48             | 55       | 0.39942   | 60         | 65       | 0.40009   |
| 23   | 54          | 68       | 0.39909   | 47             | 55       | 0.39943   | 62         | 64       | 0.40009   |
| ⋮    | ⋮           | ⋮        | ⋮         | ⋮              | ⋮        | ⋮         | ⋮          | ⋮        | ⋮         |
| 5184 | 47          | 55       | 0.40217   | 117            | 115      | 0.40212   | 117        | 115      | 0.40211   |

Sumber: Data olah, 2023

#### Lampiran 4. Estimasi Model Regresi Logistik Spline *Truncated*

Estimasi Model untuk variabel Usia ( $x_1$ )

```
> splinelin(y,x1,16,24)
```

Call:

```
polr(formula = y ~ m[, 2] + m[, 3] + m[, 4], data = DATA_FIX,
      method = "logistic")
```

Coefficients:

```
      m[, 2]      m[, 3]      m[, 4]
-0.08775838  0.11932361 -0.06440173
```

Intercepts:

```
  Gizi Baik|Gizi Kurang  Gizi Kurang|Gizi Lebih
          -0.2231746                0.7375644
```

Residual Deviance: 23104.32

AIC: 23114.32

```
> tabel_uji_parsial
```

|                        | Value       | Std. Error  | t value    | p value      |
|------------------------|-------------|-------------|------------|--------------|
| x1                     | -0.08775838 | 0.007283625 | -12.048723 | 1.969780e-33 |
| x1_1                   | 0.11932361  | 0.014958829 | 7.976801   | 1.501743e-15 |
| x1_2                   | -0.06440173 | 0.010462800 | -6.155306  | 7.493280e-10 |
| Gizi Baik Gizi Kurang  | -0.22317455 | 0.081009113 | -2.754931  | 5.870443e-03 |
| Gizi Kurang Gizi Lebih | 0.73756437  | 0.081590930 | 9.039784   | 1.569819e-19 |

### Estimasi Model untuk variabel Berat Badan ( $x_2$ )

```
> splinelinx2(y, x2, 15)
```

Call:

```
polr(formula = y ~ m[, 2] + m[, 3], data = DATA_FIX, method =
"logistic")
```

Coefficients:

```
      m[, 2]      m[, 3]
-0.2157339  1.1237612
```

Intercepts:

```
      Gizi Baik|Gizi Kurang  Gizi Kurang|Gizi Lebih
-0.93837523                0.07696182
```

Residual Deviance: 22233.05

AIC: 22241.05

```
> tabel_uji_parsial
```

|                        | Value       | Std. Error  | t value    | p value       |
|------------------------|-------------|-------------|------------|---------------|
| x2                     | -0.21573390 | 0.006780359 | -31.817473 | 3.710964e-222 |
| x2_1                   | 1.12376118  | 0.033277259 | 33.769643  | 5.504913e-250 |
| Gizi Baik Gizi Kurang  | -0.93837523 | 0.072378737 | -12.964791 | 1.937568e-38  |
| Gizi Kurang Gizi Lebih | 0.07696182  | 0.073061517 | 1.053384   | 2.921651e-01  |

### Estimasi Model untuk variabel Panjang Badan ( $x_3$ )

```
> splinelinx3(y, x3, 52, 68)
```

Call:

```
polr(formula = y ~ m[, 2] + m[, 3] + m[, 4], data = DATA_FIX,
      method = "logistic")
```

Coefficients:

```
      m[, 2]      m[, 3]      m[, 4]
0.33198726 -0.41158840  0.05075549
```

Intercepts:

```
Gizi Baik|Gizi Kurang Gizi Kurang|Gizi Lebih
                16.76604                17.72476
```

Residual Deviance: 23214.20

AIC: 23224.20

```
> tabel_uji_parsial
```

|                        | Value       | Std. Error   | t value      | p value      |
|------------------------|-------------|--------------|--------------|--------------|
| x3                     | 0.33198726  | 0.0018721831 | 177.326281   | 0.000000e+00 |
| x3_1                   | -0.41158840 | 0.0088008224 | -46.767038   | 0.000000e+00 |
| x3_2                   | 0.05075549  | 0.0079850997 | 6.356275     | 2.067043e-10 |
| Gizi Baik Gizi Kurang  | 16.76604137 | 0.0002195782 | 76355.660786 | 0.000000e+00 |
| Gizi Kurang Gizi Lebih | 17.72476448 | 0.0202277491 | 876.259855   | 0.000000e+00 |



## Estimasi Model Simultan dengan 1 Titik Knot

```
> spline1knot(y, x1, 9, x2, 15, x3, 74)
```

Call:

```
polr(formula = y ~ m[, 2] + m[, 3] + m[, 4] + m[, 5] + m[, 6] +
      m[, 7], data = DATA_FIX, method = "logistic")
```

Coefficients:

| m[, 2]      | m[, 3]     | m[, 4]     | m[, 5]     | m[, 6]     | m[, 7]      |
|-------------|------------|------------|------------|------------|-------------|
| -0.20033815 | 0.17324779 | 0.06592540 | 0.89757587 | 0.02331175 | -0.06351317 |

Intercepts:

| Gizi Baik Gizi Kurang | Gizi Kurang Gizi Lebih |
|-----------------------|------------------------|
| 0.9557389             | 1.9938619              |

Residual Deviance: 21947.03

AIC: 21963.03

```
> tabel_uji_parsial
```

|                        | Value       | Std. Error | t value   | p value       |
|------------------------|-------------|------------|-----------|---------------|
| x1                     | -0.20033815 | 0.03368861 | -5.946761 | 2.734998e-09  |
| x1_1                   | 0.17324779  | 0.03369030 | 5.142364  | 2.713035e-07  |
| x2                     | 0.06592540  | 0.01967920 | 3.350005  | 8.081011e-04  |
| x2_1                   | 0.89757587  | 0.03872084 | 23.180692 | 7.130727e-119 |
| x3                     | 0.02331175  | 0.01112930 | 2.094629  | 3.620396e-02  |
| x3_1                   | -0.06351317 | 0.01239168 | -5.125468 | 2.967988e-07  |
| Gizi Baik Gizi Kurang  | 0.95573892  | 0.51904366 | 1.841346  | 6.557088e-02  |
| Gizi Kurang Gizi Lebih | 1.99386187  | 0.51906102 | 3.841286  | 1.223914e-04  |

## Estimasi Model Simultan dengan 2 Titik Knot

```
> splinekuad(y, x1, 6, 18, x2, 14, 18, x3, 51, 52)
```

Call:

```
polr(formula = y ~ m[, 2] + m[, 3] + m[, 4] + m[, 5] + m[, 6] +
      m[, 7] + m[, 8] + m[, 9] + m[, 10] + m[, 11] + m[, 12] +
      m[, 13], data = DATA_FIX, method = "logistic")
```

Coefficients:

```
      m[, 2]      m[, 3]      m[, 4]      m[, 5]      m[, 6]      m[, 7]      m[, 8]      m[, 9]
-0.77979125  0.04690966 -0.03653321 -0.01165019  0.80021492 -0.03471581  0.30697734 -0.40197270
      m[, 10]      m[, 11]      m[, 12]      m[, 13]
-9.82598015  0.10145037 -0.36298527  0.26083689
```

Intercepts:

```
Gizi Baik|Gizi Kurang Gizi Kurang|Gizi Lebih
                -236.1314                -235.0725
```

Residual Deviance: 21635.88

AIC: 21663.88

```
> tabel_uji_parsial
```

|      | Value       | Std. Error   | t value       | p value       |
|------|-------------|--------------|---------------|---------------|
| x1   | 0.22805528  | 0.0068532098 | 3.327715e+01  | 8.267402e-243 |
| x12  | -0.03259555 | 0.0029774475 | -1.094748e+01 | 6.832124e-28  |
| x1_1 | 0.03846351  | 0.0043020140 | 8.940814e+00  | 3.863142e-19  |
| x1_2 | -0.00602264 | 0.0014166982 | -4.251181e+00 | 2.126464e-05  |
| x2   | 0.92302050  | 0.0008009533 | 1.152402e+03  | 0.000000e+00  |
| x22  | -0.04143867 | 0.0008915131 | -4.648127e+01 | 0.000000e+00  |
| x2_1 | 0.35379700  | 0.0090202180 | 3.922267e+01  | 0.000000e+00  |
| x2_2 | -0.38408213 | 0.0002791459 | -1.375919e+03 | 0.000000e+00  |

|                        |               |              |               |              |
|------------------------|---------------|--------------|---------------|--------------|
| x3                     | 3.73773949    | 0.0020046784 | 1.864508e+03  | 0.000000e+00 |
| x32                    | -85.15489264  | 0.0030587298 | -2.783995e+04 | 0.000000e+00 |
| x3_1                   | -0.41019169   | 0.0099118426 | -4.138400e+01 | 0.000000e+00 |
| x3_2                   | 0.39641767    | 0.0101019317 | 3.924177e+01  | 0.000000e+00 |
| Gizi Baik Gizi Kurang  | -476.48784266 | 0.0004899293 | -9.725645e+05 | 0.000000e+00 |
| Gizi Kurang Gizi Lebih | -475.41796165 | 0.0226141341 | -2.102305e+04 | 0.000000e+00 |

### Lampiran 5. Akurasi Model Regresi Logistik Ordinal Spline *Truncated*

```
> library(caret)

> Prediksi_Prob <- predict(ModelTerbaik, DATA_FIX, type =
"class")

> confusionMatrix(as.factor(Prediksi_Prob), DATA_FIX$`Status
Gizi Balita (BB/TB)`)
```

Confusion Matrix and Statistics

|            | Reference |       |      |
|------------|-----------|-------|------|
| Prediction | 1         | 2     | 3    |
| 1          | 1614      | 336   | 0    |
| 2          | 488       | 13219 | 276  |
| 3          | 0         | 177   | 1490 |

Overall Statistics

Accuracy : 0.9274

95% CI : (0.9235, 0.9312)

No Information Rate : 0.7802

P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.797

Mcnemar's Test P-Value : NA

Statistics by Class:

|                      | Class: 1 | Class: 2 | Class: 3 |
|----------------------|----------|----------|----------|
| Sensitivity          | 0.7678   | 0.9626   | 0.84371  |
| Specificity          | 0.9783   | 0.8025   | 0.98882  |
| Pos Pred Value       | 0.8277   | 0.9454   | 0.89382  |
| Neg Pred Value       | 0.9688   | 0.8582   | 0.98268  |
| Prevalence           | 0.1194   | 0.7802   | 0.10034  |
| Detection Rate       | 0.0917   | 0.7511   | 0.08466  |
| Detection Prevalence | 0.1108   | 0.7945   | 0.09472  |
| Balanced Accuracy    | 0.8731   | 0.8826   | 0.91627  |

**Lampiran 6. Biodata Penulis*****CURRICULUM VITAE*****A. Data Pribadi**

1. Nama : Samsul Arifin
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7. Bidang/Ketertarikan : Pemodelan Statistika, Machine Learning

**B. Riwayat Pendidikan**

1. Tamat SMA tahun 2016 di SMA Negeri 1 Pallangga
2. Sarjana (S1) tahun 2020 di Universitas Hasanuddin Departemen Statistika Program Studi Statistika
3. Magister (S2) tahun 2023 di Universitas Hasanuddin Departemen Statistika Program Studi Statistika

**C. Pekerjaan dan Riwayat Pekerjaan**

1. Tentor Matematika, FOCUS-A Makassar
2. Customer Service, PT. Bank Rakyat Indonesia, Tbk

**D. Karya ilmiah yang telah dipublikasikan**

- Arifin, S., Islamiyati, A., & Herdiani, E. T. (2023). Ability of Ordinal Spline Logistic Regression Model in The Classification of Nutritional Status Data. *Commun. Math. Biol. Neuroscience*, 83.
- Arifin, S., & Herdiani, E. T. (2023). Modeling of COVID-19 Cases in Indonesia with the Method of Geographically Weighted Regression. *Jurnal Matematika, Statistika dan Komputasi*, 19(2), 342-350.
- Arifin, S., Islamiyati, A., & Raupong, R. (2020). Kemampuan Estimator Spline Linear dalam Analisis Komponen Utama. *ESTIMASI: Journal of Statistics and Its Application*, 40-47.
- Ente, D. R., Thamrin, S. A., Arifin, S., Kuswanto, H., & Andreza, A. (2020). Klasifikasi faktor-faktor penyebab penyakit diabetes melitus di rumah sakit unhas menggunakan algoritma c4. *5. Indonesian Journal of Statistics and Its Applications*, 4(1), 80-88.

Ente, D. R., Arifin, S., & Thamrin, S. A. (2019, October). Comparison of C4. 5 algorithm with naive Bayesian method in classification of Diabetes Mellitus (A case study at Hasanuddin University hospital Makassar). In *Journal of Physics: Conference Series* (Vol. 1341, No. 9, p. 092009). IOP Publishing.